Abstracts

Propagation Characteristics of Monolithic YBaCuO Coplanar Strip Transmission Lines Fabricated by Laser-Writing Patterning Technique

W.N. Maung, D.P. Butler, W. Xiong, W. Kula and R. Sobolewski. "Propagation Characteristics of Monolithic YBaCuO Coplanar Strip Transmission Lines Fabricated by Laser-Writing Patterning Technique." 1994 Microwave and Guided Wave Letters 4.5 (May 1994 [MGWL]): 132-134.

We report our studies on the propagation characteristics of YBa/sub 2/ Cu/sub 3/O/sub 7/-on-LaAlO/sub 3/ superconducting coplanar strip transmission lines and resonators fabricated with a novel laser-writing patterning technique. The measurements were performed in the 0.1 to 15 GHz frequency range at temperatures between 300 and 24 K. We show that at temperatures below the superconducting critical temperature, the S/sub 21/ parameter of our transmission lines was close to 0 dB at all the frequencies, while the Q-factor of the resonator structure was as high as 5000 at 6 GHz and 24 K. The transmission line propagation velocity was about 10/sup 8/ cm/s. Our results indicate that the laser-writing patterning technique can be effectively used to fabricate high-quality superconducting microwave elements and circuits.

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